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ABSTRACT

Computers can provide four kinds of help to practicing writers: (1) data storage and retrieval, (2) computer-assisted instruction and text feedback, (3) utility or word processing programs, and (4) telecommunications capability. Writing teachers must incorporate certain values into the planning of computer applications in the writing curriculum. The first value is freedom, in light of the limits of composition pedagogy and of the function of computers as enforcers and controllers. Teachers must allow students opportunity to learn for themselves, whether by wrestling with a program thought to be too advanced for them (the way people learn to play computer games without instructions), by using programs that ask open-ended questions, or by not using the computer at all if they so choose. A second value involves honesty and humaneness in the feedback given by computers. Programs that evaluate style may be counter-productive, whereas feedback such as "that was my toughest question" gives the student pride in a right answer or information for evaluating the test in the event of a wrong answer. A third value is playful creativity. For example, a computer "bulletin board" is a safe playground for trying out essays on other readers, and word processing programs encourage risk-taking in revision.(HTH)

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Issues of Integrating Computers into Writing Instruction

In his computer program COMPUPOEM, Stephen Marcus gives some "Zen" advice: "In the beginning, the computer is the master.... Then, the person is master of the computer.... In the end, neither needs to be master." As educators become more computer literate and educational software improves, we move from the first stage to the second and third. Now instead of asking what is available for our classes and how we get it to work, we need to return to the fundamental educational questions he have always asked: what am I trying to teach in writing instruction? Then we can ask: how can computers help with these goals? Finally, after seeing what computers can do, we need to decide how they should be used in instruction, by considering the pedagogical and philosophical assumptions underlying instruction. That is, what kind of experience do we want our students to have?

In this paper I'll set forth the answers I've come up with as the technology has advanced and I've changed back and forth between Marcus' stages two and three. I hope that the questioning process will serve as a model, and the answers will start a continuing dialogue with colleagues using computers in writing instruction.

What Do I Want to Teach Students?

What are my goals in teaching writing? Quite simply, I aim to encourage a mind that thinks, a heart that cares and a voice that reaches its listeners. To develop these skills, a writer needs to interact with the world, the audience, and the text. (Insert Figure 1 about here.) That is, the writer finds data and develops ideas by searching her memory, conversing with others, observing carefully, and reading the feelings, observations and conclusions of other writers. (For clarity, I will refer to the writer as "she" and the reader as "he.") This interaction--of give and take, of vision and revision--can occur at the same time she considers her audience and the context in which he will read. She also interacts with her text--planning, writing and revising.

How Can Computers Help?

Now and in the foreseeable future, computers can provide four kinds of help to practising writers:

1) Data Storage and Retrieval - Increasingly we will see computers used as a means for fast, efficient storing and retrieval of information. Just as students now learn how to use the database called a library, they will soon learn how to search computerized databases, make use of community bulletin boards for requesting information, and get access to texts stored on disk.

Furthermore, we can think of assignments of larger scope and longevity when our students can store, modify and easily reprint their work. Why not a portfolio of writing just as a Fine Arts major amasses a portfolio of work? Why not publish a book of

student essays in a class? Why not keep a comprehensive annotated bibliography--with selections for current papers and reference for future work? Why not think of the writer's work as a database, with easy access to ideas by using an indexer.

2) Computer-Assisted Instruction (CAI) and Text Feedback -- Perhaps the most controversial use of computers in writing involves "teaching" various aspects of writing through drill, tutorials or stylistic checkers. Such programs range from being content-rich to being content-free. With a program like Hugh Burns' TOPOI, the student is asked to provide information (such as topic and thesis) which is then inserted strategically in further questions. For example, if I say I'm writing about "money," the program may ask me first, "How does the private view of money differ from the public view?" If I had said my topic was "slugs," then the program would have asked, "How does the private view of slugs differ from the public view?" If I ask for an explanation of the question, a pre-programmed answer will be printed for me. Such a program is relatively content-free.

In drill and practice, however, with predetermined questions and answers, the program is content-rich. And this is true of text feedback, too, whether we consider spelling programs or stylistic checkers. The problem, however, is that such programs, at present, have limited ability to parse English and very little semantic sense. We should check carefully to see what kinds of feedback the writer gets and how skillful she has to be to interpret the computer feedback.

3) Utility Programs -- A word processing program is a utility

program. In itself, it does not instruct, but it can be put to many different purposes. Two new programs combine a word processing program either with other utilities or with forms of computer-assisted instruction. For example, in addition to a word processor, the program WANDAH has a set of pre-writing and revising features:

(Insert Figure 2 about here.)

free writing and "invisible writing" (with no video feedback) for help against writer's block and a short planner (to "nutshell" the writer's situation) as well as an argument-building planner and outliner. For revising, there are programs to flag spelling errors and possible word choice problems, stylistic problems (like overuse of "be" verbs), and large-scale organizational problems. Furthermore, WANDAH makes it possible for instructor or peers to comment on a paper in an easily seen (and removed) manner.

Another program, QUILL, combines a word processor with three other utilities--a planner which makes available pre-writing questions developed by the teacher or students, a library which makes texts available to all users or only certain others, and a mailbag which allows users to send notes to each other (for example, in comment on texts seen via the library program).

Similarly, electronic spreadsheets like Visicalc can be used in a variety of ways--to keep tax records, inventory, and so on. Graphics programs (like MacPaint for the Macintosh) or DBMaster for home-grown databases also qualify. Increasingly, these utility programs are being programmed so that they can work together in "integrated systems." That means that I can create a

bibliography on my database, print it with an introductory essay with my word processor, and provide illustrative inserts with my graphics package.

4) Communications -- The ability to send text or tables or pictures electronically represents one of the greatest advantages of computers. Instead of isolating computer users in fantasy worlds, telecommunications open the possibility of communicating with real audiences without knowledge (usually) of the writer's age, sex or race. With a phone hook-up (called a modem), a writer can send her message quite literally "faster than a speeding bullet." And by using free "community bulletin boards," we have a perfect medium for having our students truly write to a general audience (instead of defining the audience as "general" when everyone knows the teacher is the only one who will read it).

What Are My Educational Assumptions and Values?

Having articulated what I want to teach and how computers can help, I now decide on the values which help me plan which computer applications to use and how to integrate them into the curriculum I design for my students.

In the process of questioning, I discovered that one of my most basic assumptions is an intensely embarrassing one: We don't know how people learn. When we view our students' performance honestly, most of us admit that some of our students fail to learn from even our most brilliant teaching strategies, and others learn better or differently than we have planned or anticipated. We are caught in an impossible situation. We must base our teaching on

ne pedagogical theory, or else our attempts range from unsystematic intuitive insights to random lunges. Yet we must humbly acknowledge the limits of our pedagogy.

OK, but why do I feel it necessary to bring up this embarrassing point in this context? Because computers function so excellently as enforcers and controllers. If we acknowledge the limits of our pedagogy, then we must commit ourselves to the first value - freedom - not just for the sake of humanity, but as an admission of humility.

In their book about the running and self-renewal of excellent companies, Thomas J. Peters and Robert H. Waterman, Jr. talk about the importance of "leaky systems," ones which are not so tightly audited, which give people enough room and resources to try side experiments and innovations (In Search of Excellence, [New York: Warner Books, 1982]). Essentially, I'm arguing for "leaky systems" of learning, despite the ability of computers to plug the leaks - at least apparently.

For example, we can design drill and practice programs which diagnose student errors, and individually design a learning program for the student. Since such programs can be complex, why not build in a control which routes the student automatically to the modules she needs? With the best intentions in the world, we may start using computers to control.

But what can happen in such cases? First, students may spend their time and energy in trying to subvert the system (a la War Games) or resist it. Second, we give up the "peripheral," leaky-systems, backdoor possibilities of learning. Have you ever

watched someone learning to play PacMan, or another video game? The rules are fairly complex, yet there are no directions given on the machine. How do people learn? They watch others, and they experiment themselves. Again, we don't know how people learn. Why shouldn't a student try a module that is too hard for her? She may learn something, or she may at worst waste a few minutes learning that the prescribed module and level is more suitable.

Freedom can also mean the right to discover for oneself that she is wrong. Programs for discovering ideas do not give answers. They cannot, unless they ask relatively trivial questions. Some, like Burns' TOPOI, give canned answers of encouragement, like "Fantastic, Helen. Any more?" Others, like my SEEN program, ask open-ended questions about a character in literature (chosen by the user), and then simply allow the student to add, delete or change responses. (See articles by Rodrigues, by Schwartz, and by Burns and Culp for further information on such programs.) One of my students using Burns' program described the freedom to discover he experienced with the program, as follows:

> Although it wouldn't outright give me answers, with its line of questioning, it led me in the direction to seek my own answers. . . . I can feed in my personal feelings which, expressed to humans or publically, might be misinterpreted. The computer just takes my comments in stride. . . . This program could be used to help students express feelings and maintain those feelings by entering them into the computer.

Another freedom is the right to choose, as in WANDAH.

Other programs are more prescriptive (about what the user can or must do with the program. With WANDAH, although a teacher may prescribe that a student use a particular pre-writing or revising program, the student has access to the others. And preliminary reports about freshman writers at UCLA indicate that students do use and like the modules (Lisa Gerrard, "Using WANDAH in the Writing Classroom: A Teacher's View," paper presented at the Conference on College Composition and Communication, New York, March 1984). With other programs, like QUILL or the network part of my SEEN program, the computer supports communication among students. Especially "free" is the capacity of students to show their work selectively, as allowed by QUILL or by the mini-computer set up by Rob Weedon for his students at St. Mark's School in Southboro, Mass. (personal communication, 1983). Teachers using this system, or those encouraging peer review even on microcomputers, are content not to see every draft.

Finally, students should be free not to use computers. The use of computers can bring tremendous benefits in writing, as well as "status" of a sort especially welcome to basic writers, and a relatively anxiety-free introduction to computers. But to force someone to use computers is not only asking for a whole new set of excuses (the system was down, the lab was closed, etc.), it is also inhumane.

In addition to freedom, the second set of values involves honesty and humaneness. At times it's hard to find responses in CAI which are both, especially if they are generated at random (for variety) or without the ability to evaluate or even understand the

semantic content of a student's response. If a response is uniformly enthusiastic, students soon learn to distrust such facile praise. At best, they ignore it. At times, they will play with it. Hugh Burns tells the story of students at the United States Air Force Academy who soon discovered the computer responded to unforeseen questions by saying, "That seems ok to me." These students soon were getting computer printouts in which they asked, "Is pre-marital sex permissible?"

Other kinds of computer feedback, like statistics on style, need to be interpreted for the student with practice in judging what (if anything) to change. The HOMER program, for example, can "map" the writer's use of nominalizations--that is, words ending in "-tion"--by doing a carriage return whenever it meets a nominalization in the text and outdenting the printing of each line starting with a nominalization. (See Figure 3.) To test HOMER (in an early prototype), I typed in a paragraph from a memo I considered especially well written. It was from the Provost to the faculty about enrollment, faculty staffing and planning. Out of 169 words, 12 were nominalizations. The program's response, after printing a number of statistics, was "Do your need all those 'SHUN' words? Some might become verbs--experiment!!" Clearly one of the 'SHUN' words, "tuition," was not a promising subject for such an experiment. In fact, I wouldn't have changed the memo very much. The topic was complex and abstract, and in my judgment the style was as concrete and people-oriented as could be reasonably expected. At first my response was to try to find different parameters of excellence for different writing situations. But now it seems easier and better to simply embed such programs within

discussion and development of stylistic judgment. If I don't think my students are ready for such judgment calls, then I don't subject them to the statistics. After all, we don't judge writing by statistics or "maps," we judge it by how it sounds.

A positive example of humane feedback comes from a drill-and-practice module for the PLATO system developed by Bob Bator. The following comment appeared after one of the questions: "That was my toughest question." If the student got the answer right after one try, she could feel justifiable pride; if she never got it right, this response gave her factual feedback for evaluating the test.

My third value is playful creativity. Play is a safe, rule-governed activity without serious consequences, according to a definition developed by Johan Huizinga in Homo Ludens (Boston: Beacon Press, 1970). I value the computer because it can provide a playground. A bulletin board can be a safe place to try out a penname-signed essay, whether that forum is on a community bulletin, within QUILL, or within SEEN. A word processing program can make revision playful, with its electronic text encouraging a tentativeness that keeps egos unbruised by criticism. A student can actually watch and hear how another person reads the text. Since the printer does most of the re-typing for a new draft, revising is no longer punitive.

I have also changed my syllabus to encourage playful risk-taking. Although my students write three papers in a segment of the class (and I respond), they only have to revise two for a grade. They can risk something new and daring because they are allowed one monumental failure without serious consequences.

These are my answers--I use computers to teach a writer how to interact with her world, her audience and her text, but I design computer applications and integrate them into the class by consciously judging them to preserve freedom, honesty, humanity and playfulness. I have learned often from mistakes, but I put these values forth as a personal credo and a challenge to dialogue.

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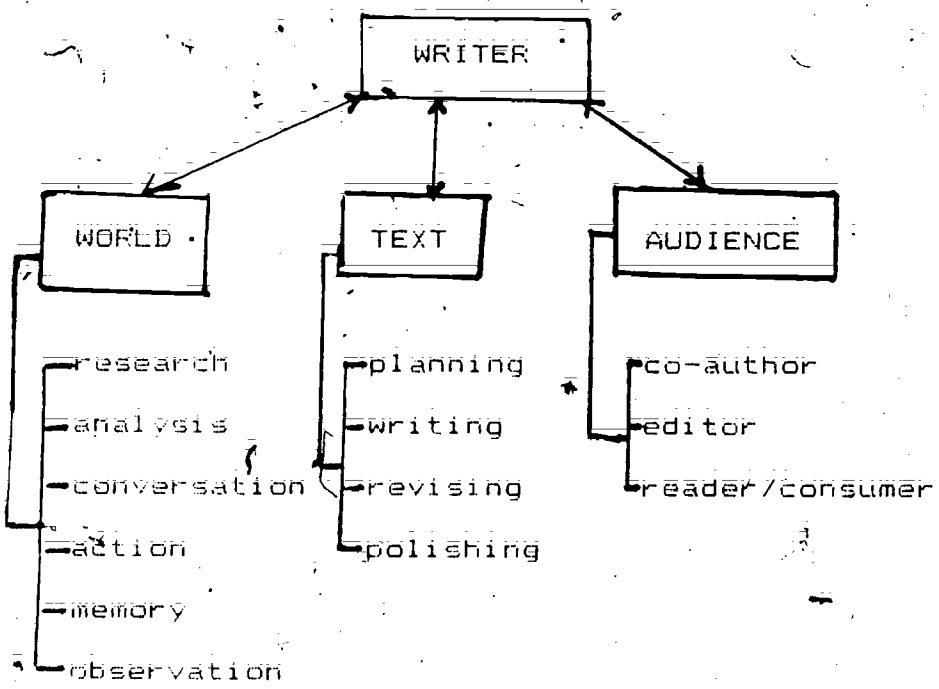
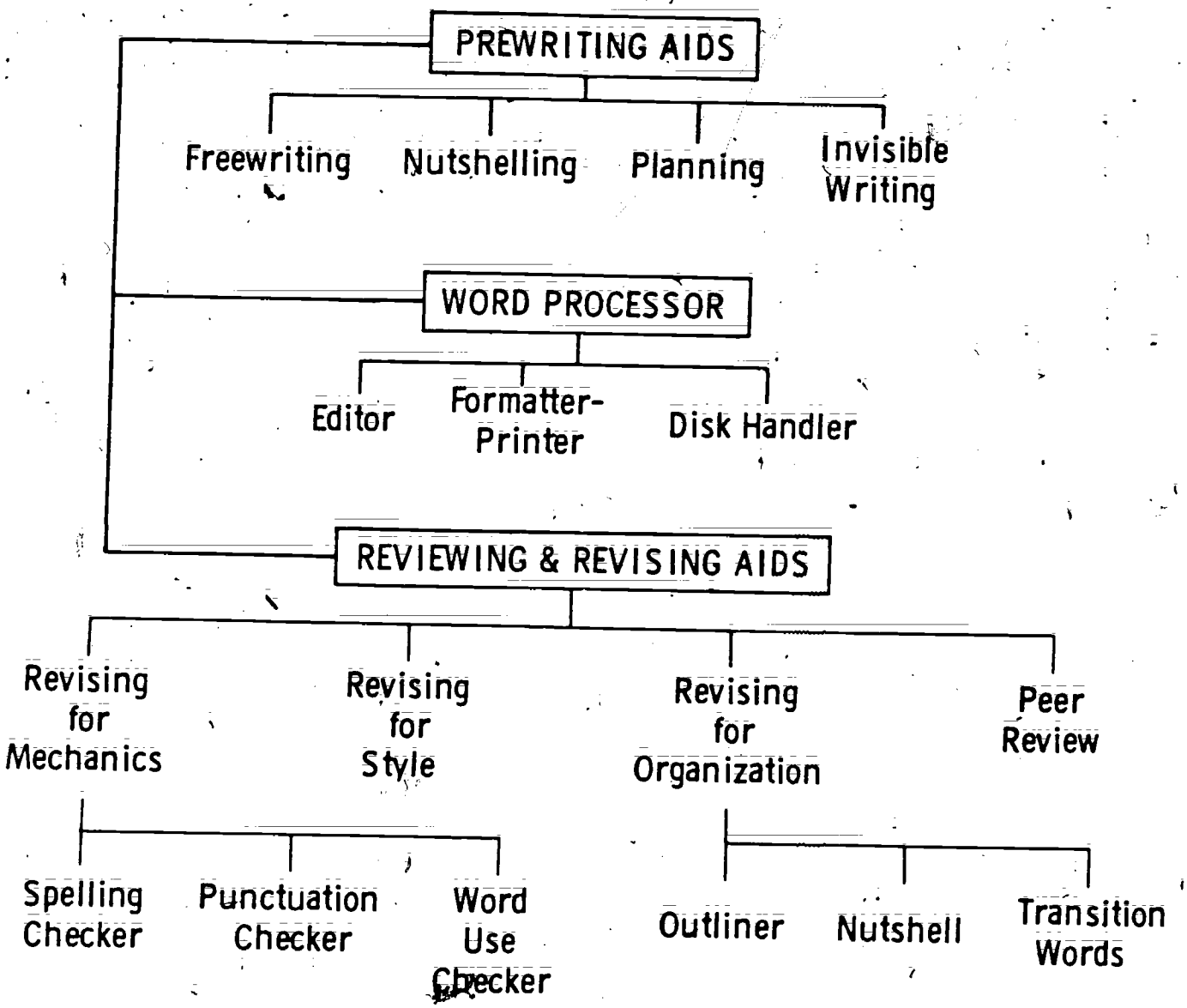
Figure 1: Writing as Interaction



WANDAH

Writing aid AND Author's Helper



For some time now I have been studying the allocation of our academic resources, reviewing enrollment trends by discipline, and attempting to forecast the levels of new resources we can reasonably expect to become available over the next few years.

Figure 3: Printout of .HOMER map of nominalizations ('tion'/SHUN words)